What is claimed is:

CLAIMS

1. An actuator device comprising:

at least a first and a second electro-active element; and

at least a first and a second conductor,

wherein said first conductor is in direct electrical contact with said first electro-active element, and said second conductor is in direct electrical contact with said second electro-active element; and

wherein said first and second electro-active elements and said conductors are arranged such that said device forms a generally sigmoidal shape upon activation of said first and second electro-active elements.

2. The actuator device of claim 1, further comprising at least a third conductor, and wherein said first electro-active element comprises at least a first and a second region, and

wherein said first conductor is in direct electrical contact with said first region of said first electro-active element, and said third conductor is in direct electrical contact with said second region of said first electro-active element.

3. The actuator device of claim 1, further comprising an inactive element.

4. The actuator device of claim 2, wherein at least two of said at least three conductors are in electrical communication with each other.

5. The actuator device of claim 2, wherein said inactive element is a component of a disk drive.

6. The actuator device of claim 1, wherein at least one of said electro-active elements is driven in a positive orientation relative its poling field, and at least one of said electro-active elements is driven in a negative orientation relative to its poling field.

7. The actuator device of claim 1, said device further comprising an enclosing layer encasing said electro-active elements and said conductors, and wherein said actuator device forms a card.

8. The actuator device of claim 1, wherein said at least first and second conductors are in direct electrical contact with said at least first and second electro-active elements at a plurality of points.

9. The actuator device of claim 1, wherein said actuator device is shear-coupled to an object.

10. The actuator device of claim 1, wherein said actuator device is configured as a stack, a flexure, a shell, a plate, or a bender.

11. The actuator device of claim 1, further comprising an insulator, and wherein said first and second electro-active elements and said insulator are bonded together such that in-plane strain in said first and second electro active elements is shear coupled between said first and second electro-active elements and said insulator.

12. The actuator device of claim 11, further comprising at least a third conductor, and wherein said third conductor is in direct electrical contact with said first or second conductor.

13. An actuator device comprising:

at least one electro-active element having at least a first region and a second region; and

at least a first and a second conductor,

wherein said first conductor is in direct electrical contact with said first region of said electro-active element, and said second conductor is in direct electrical contact with said second region of said electro-active element; and

wherein said electro-active element and said conductors are arranged such that said device forms a generally sigmoidal shape upon activation of said first and second regions of said electro-active element.

14. The actuator device of claim 13, wherein said first and second regions of said electro-active element are poled in opposite directions.

15. The actuator device of claim 13, wherein said first and second regions of said electro-active element are poled in the same direction.

16. The actuator device of claim 13, wherein said actuator device is shear-coupled to an object.

17. The actuator device of claim 13, wherein said actuator device is configured as a stack, a flexure, a shell, a plate, or a bender.

18. The actuator device of claim 13, further comprising an insulator, and wherein said electro active element and said insulator are bonded together such that in-plane strain in said electro-active element is shear coupled between said electro-active element and said insulator.

19. The actuator device of claim 18, further comprising at least a third conductor, and wherein said third conductor is in direct electrical contact with said first or second conductor.

20. A method for damping vibration of an object, said method comprising the steps of:

(a) bonding the actuator device of claim 1 to the object such that in-plane strain of said at least first and second electro-active elements mechanically acts on the object when an electrical signal is applied to at least one of said at least first and second conductors; and

(b) applying an electrical signal to said one of said conductors.

21. A method for forming an actuator device, said method comprising the steps of:

(a) preparing a flex circuit comprising an insulator and at least a first and a second conductor; and

(b) bonding an electro-active element to said flex circuit such that in-plane strain in said electro-active element is shear coupled between said electro-active element and said flex circuit, and such that said electro-active element is in direct electrical contact with said at least first and second conductors.